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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
08/881,948	06/25/1997	DAVID P. STRAUSS	MRCO2/401F/2	3603

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EXAMINER

MCDONALD, RODNEY GLENN

ART UNIT

PAPER NUMBER

1753

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23

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
08/881,948

Applicant(s)
Strauss et al.

Examiner
Rodney McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Feb 12, 2003
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9-13, 23, and 24 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-13, 23, and 24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other:

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DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on February 12, 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was

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made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujitsu (Japan 59-179784) in view of Zejda (U.S. Pat. 5,112,467).

Fujitsu teach in a sputtering device for forming thin film on a substrate by applying direct current of high voltage on the target in a magnetron, the target is attached to a water cooling backing plate by screws with a metal sheet between them. (See abstract)(Applies to claims 9 and 23)

In Figure 2, the target 11 has a generally disk shaped surface having two planar surfaces and a cylindrical outer periphery manufactured of sputtering material. The target has at least one radially-inward step proximate the outer periphery as seen in Figure 2. The target is manufactured of a single material. Holes are provided in proximity to the targets outer periphery to allow screws to attach the target to the backing plate. (See Figure 2)(Applies to claims 9 and 23)

The differences between Fujitsu and the present claims is that the threaded holes in the target are not discussed.

Zejda teach a cathode sputtering apparatus provided with a quick disconnect mechanism for rapid replacement of a target. (See Abstract)(Applies to claims 9 and 23)

In Fig. 1 there is illustrated an upper portion 19 of a cathode chamber on which is received an annular target unit. As illustrated, the target unit comprises a target 1 and a target base

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plate 2, the base plate 2 serving as a target holder. (Column 2 lines 59-65)(Applies to claims 9 and 23)

The target 1 and base plate 2 are secured together by means of screw bolts 14. The upper portion 19 essentially comprises the cover of the cathode chamber. (Column 2 lines 66-68) From Fig. 1 threaded holes are provided in order for the threaded screw to secure the target to the holder. (See Fig. 1)(Applies to claims 9 and 23)

The motivation for utilizing screws to secure a target is that it is desired to provide a target with rapid replacement. (See Abstract)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a target having a generally disk-shaped section having two generally planar surface and an outer periphery, the generally disk-shaped section having at least one radially-inward step proximate the outer periphery, manufactured out of a single material, and providing holes in the outer periphery of the target as taught by Fujitsu and to have provided threaded holes in a target so screws can secure the target to a holder as taught by Zejda because it is desired to provide a target which can be replaced rapidly.

4. Claims 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujitsu in view of Zejda as applied to claims 9 and 23 above, and further in view of Inoue (U.S. Pat. 5,244,556).

The differences not yet discussed is exposing one side of the target to vacuum pressure while the other side is not exposed to vacuum pressure and the materials of the sputtering target.

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Inoue teach in Fig. 2 an example of target in which solder, a brazing filler metal having a low melting point is not used. Referring to Fig. 2, the target plate 31 is directly mounted on the flange 3a of the support frame 3b by respective screws 17a and 17b via the sealing member 4 (the O-ring). Thus, the target plate 31 is directly cooled by cooling water (the heat exchanging medium). (Column 2 lines 31-37)(Applies to claims 10-13)

Inoue also suggest that target materials for a target can be aluminum, one of the metals titanium, zirconium, tungsten, molybdenum, gold, tantalum, niobium, palladium, manganese, silver, zinc, ruthenium, and tellurium, an alloy in which at least one of the above metals is the chief ingredient, chromium, nickel, a chromium alloy, a nickel alloy, magnetic metals such as permalloy, a silicon alloy of one of the metals titanium, tungsten and molybdenum, silicon, and an oxide of any of the above materials. (Column 7 lines 62-68; Column 8 lines 1-5)(Applies to claims 10-13)

The motivation for exposing one side of the target to vacuum pressure and the other side not being exposed to vacuum pressure is that it is desired to directly cool the target and the motivation for forming a target out of different materials is that it is desired to sputter different materials on a substrate. (Column 2 lines 31-37; Column 7 lines 62-68; Column 8 lines 1-5)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to expose one side of a target to a vacuum while the other side is not exposed to a vacuum and to have made a target out of different materials as taught by Inoue because it is desired to cool a target and deposit different materials on a substrate.

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5. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujitsu in view of Zejda as applied to claims 9 and 23 above, and further in view of Wegmann et al. (GB 2,173,217).

The differences not yet discussed is two radially inward steps in the target.

Wegmann teach in Fig. 5 a target plate 1 having on its outer periphery a cooling lip 12 with which may be associated holding means. Additionally are provided further cooled clamping rings 14 of a smaller diameter the cooling surfaces of which bear onto a cooling rib 15 on the lower side of the target plate 1. (Page 2 lines 52-61)(Applies to claim 24)

The motivation for providing two stepped surfaces on a target surface is that it is desired to cool the target. (Page 2 lines 52-61)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided two stepped surfaces as taught by Wegmann et al. because it is desired to cool the target.

Response to Arguments

6. Applicant's arguments filed February 12, 2003 have been fully considered but they are not persuasive.

In response to the argument that Fujitsu does not consider overcoming the difficulty of a water to vacuum seal required for sputter target integrity, it is argued that the claims are not concerned with water tight integrity. Furthermore, the combination of references suggest screws

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for maintaining a mechanically tight fit. Such tight fit would maintain a water to vacuum seal required for sputter target integrity. (See Fujitsu discussed above)

In response to the argument that the combination of references do not address the type nor style of target of the present application, it is argued that the combination of references address the claim limitations required by the claimed subject matter. For example Fujitsu teach a disk-shaped section having two planar surfaces and an outer periphery, the disk shaped section having at least one radially-inward step proximate said outer periphery, the target being manufactured homogeneously of sputtering material and the disk-shaped section defining holes proximate the outer periphery of the disk shaped section. Zejda suggest that such holes should be threaded in order for a screw to attach the target to a backing plate. (See Fujitsu, Zejda, Inoue and Wegmann discussed above)

DECLARATION

The declaration is considered unpersuasive and is discussed below.

In response to the statement that Fujitsu does not disclose a means of attaching the target material, by means of screws, from the backside of the backing plate where the water cooling takes place, it is argued that the claims do not require the limitation of attaching the target material, by means of screws, from the backside of the backing plate where the water cooling takes place. The limitations of the claims are addressed by the references as discussed above. (See discussion above)

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In response to the statement that the combination of references do not address neither the type nor style of target in the application, it is argued that the combination of references do teach the type and style of the target required by the claim limitations as discussed above. (See discussion above)

In response to the statement that Fujitsu is encumbered by a mistranslation, it is argued that the translation was made by a certified translator and that it is believed that the translation is correct.

In response to the statement that the combination of Fujitsu and Zejda to include a screwed target assembly is not feasible as the locations and placement of the screws as taught in Fujitsu and Zejda would seriously defeat any attempt to produce a usable sputter target assembly, it is argued that as seen in Fujitsu the sputter target is useable even with the placement of the screws as seen in Figure 3. (See Figure 3 of Fujitsu)

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Conclusion

7. All claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP. § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

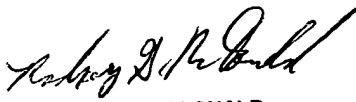
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rodney McDonald whose telephone number is 703-308-3807. The examiner can normally be reached on M-Th from 8 to 5:30. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen, can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.



RODNEY G. MCDONALD
PRIMARY EXAMINER

RM

February 28, 2003